

<sup>(12)</sup> UK Patent Application <sup>(19)</sup> GB <sup>(11)</sup> 2 280 921 <sup>(13)</sup> A

(43) Date of A Publication **15.02.1995**

(21) Application No 9416077.7

(22) Date of Filing 09.08.1994

(30) Priority Data  
(31) 9316481 (32) 09.08.1993 (33) GB

(71) Applicant(s)  
**Alan Bettin (Holdings) Limited**  
**(Incorporated in the United Kingdom)**  
**Seale Lane, Seale, Nr FARNHAM, Surrey, GU10 1LD,**  
**United Kingdom**

(72) Inventor(s)  
**Alan Bettin**

(74) Agent and/or Address for Service  
**Hughes Clark & Co**  
**114-118 Southampton Row, LONDON, WC1B 5AA,**  
**United Kingdom**

(51) INT CL<sup>6</sup>  
E02D 29/14

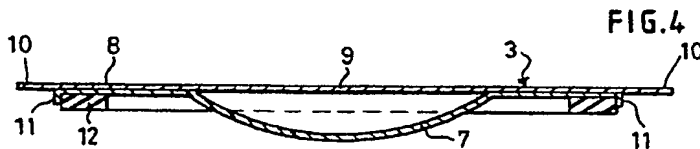
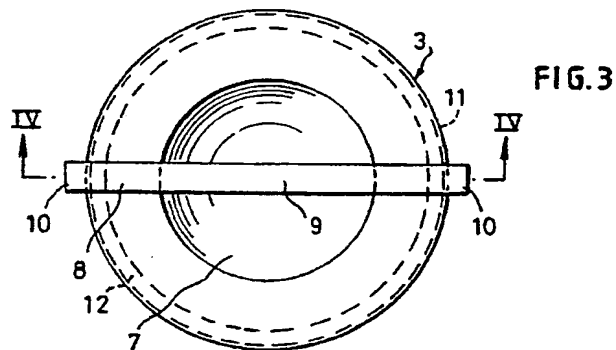
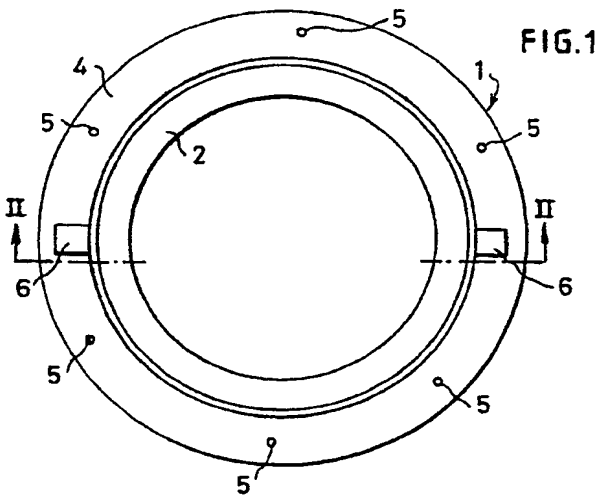
(52) UK CL (Edition N )  
E1G G96B G96G G96H G96K

(56) Documents Cited  
GB 2247037 A GB 0297006 A

(58) Field of Search  
UK CL (Edition M ) E1G G96B  
INT CL<sup>5</sup> E02D 29/14  
Online database: WPI

**(54) Lockable unit for installation in a manhole cover**

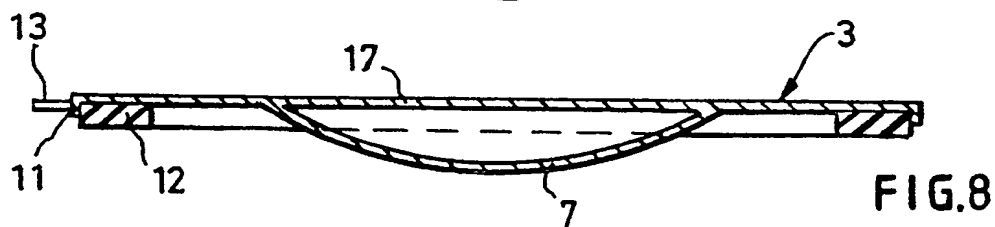
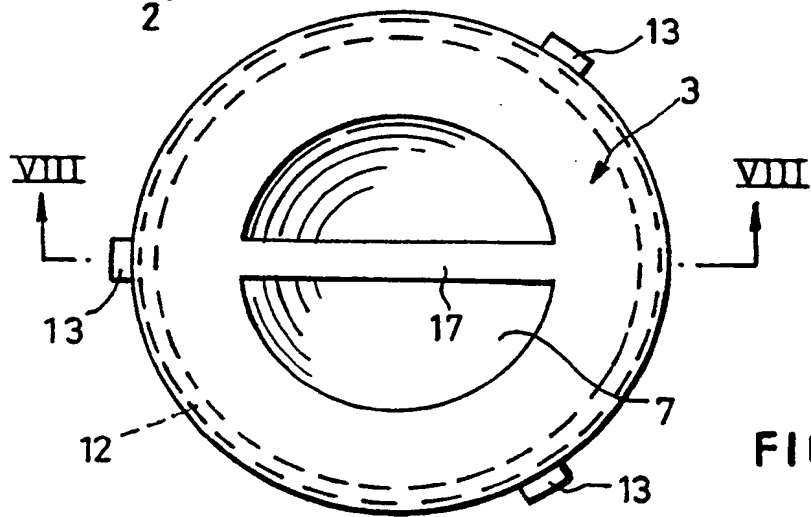
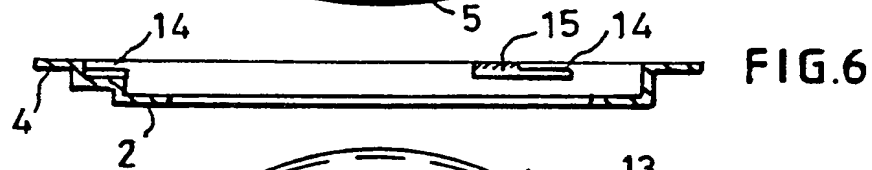
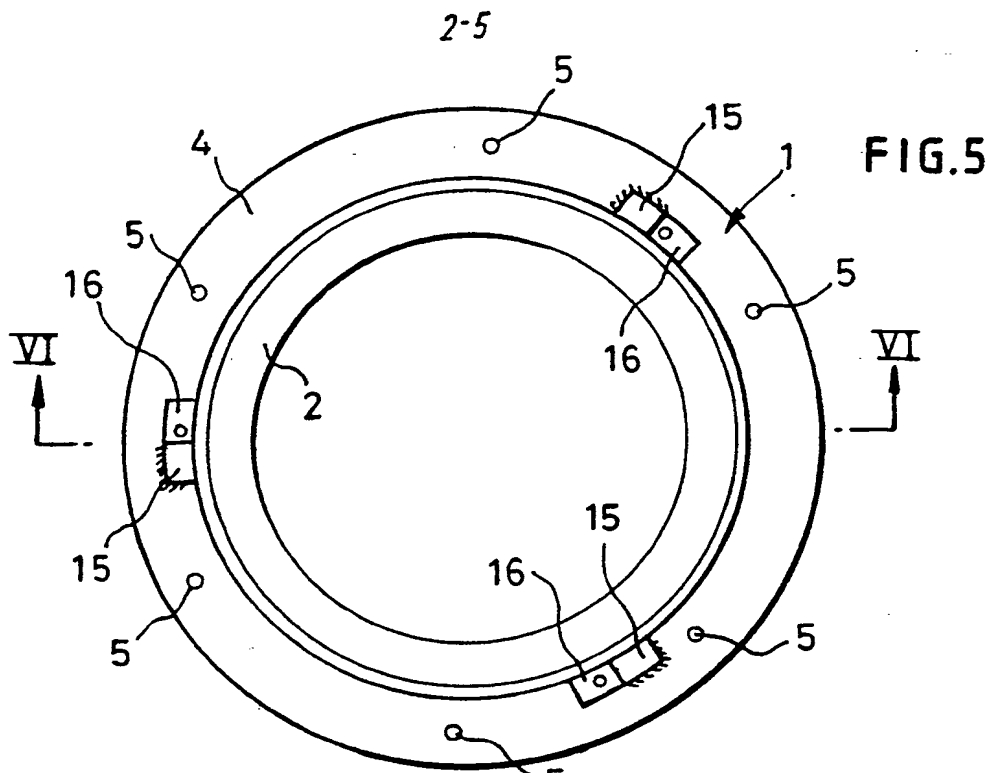
(57) A lockable unit for installation in a manhole cover comprises an annular housing (1), a cover (3) having locking means for engagement with the housing and a seal (12) of compressible elastomeric material interposed between the cover and the housing.



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

BEST AVAILABLE COPY

GB 2 280 921 A



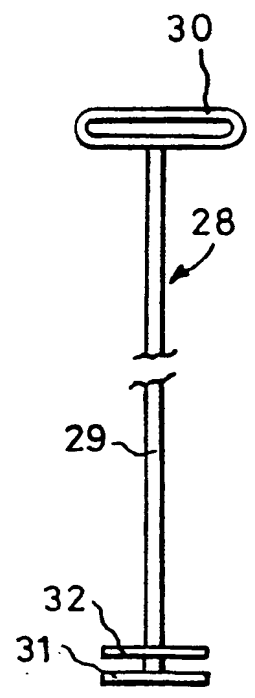
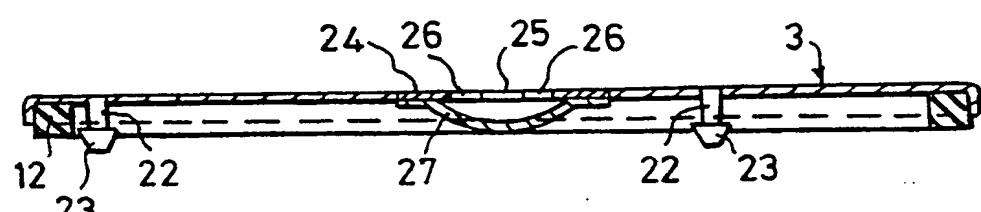
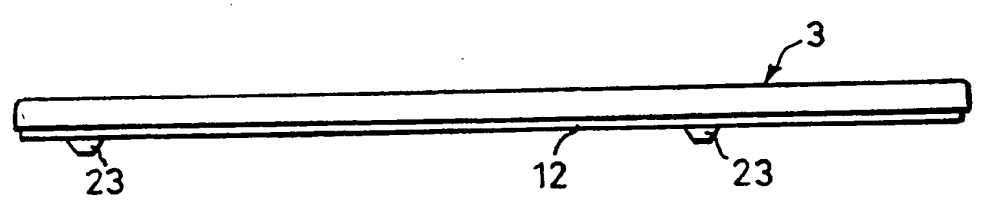
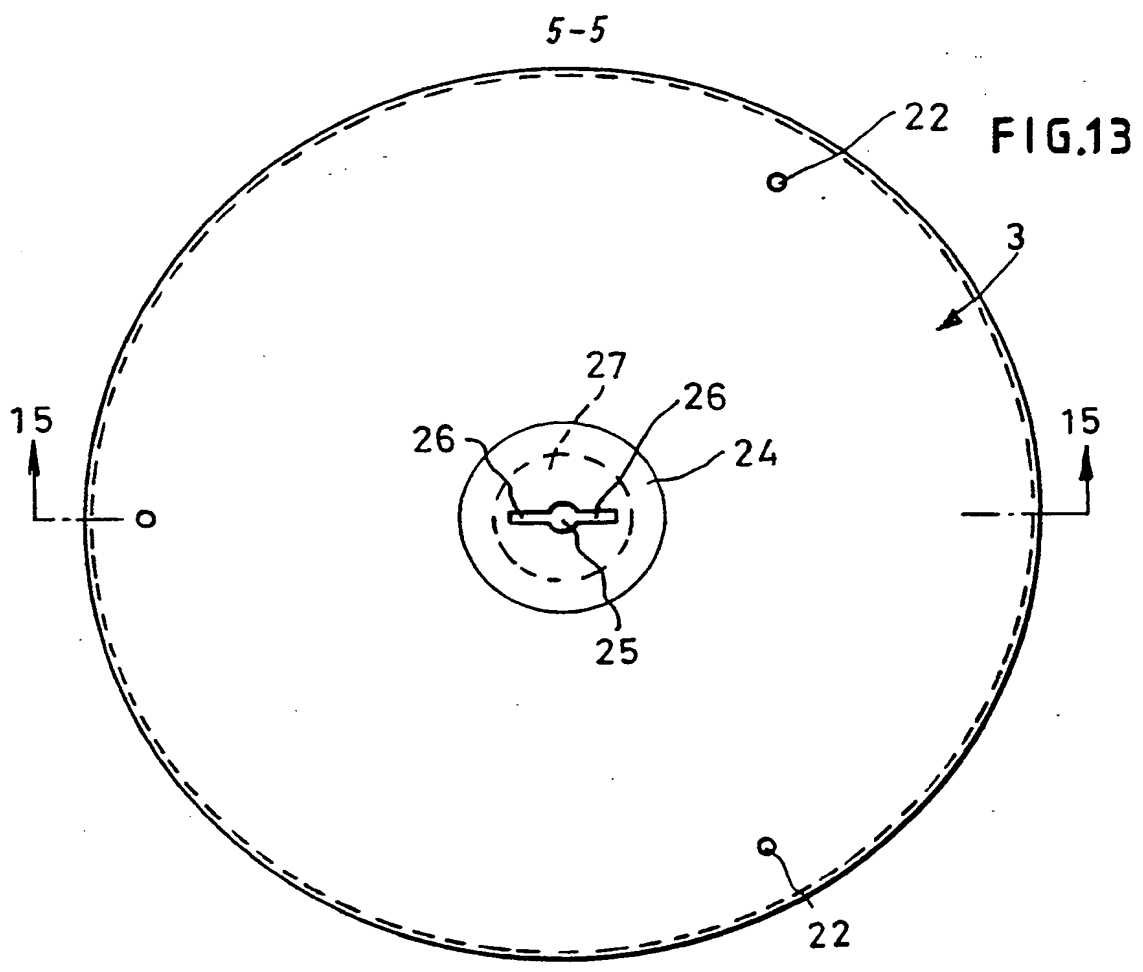


Fig. 2 is a cross-section taken along the line II-II of Fig. 1;

Fig. 3 is a plan view of the cover of the cover unit;

5 Fig. 4 is an enlarged cross-section taken along the line IV-IV of Fig. 3.

Fig. 5 is a plan view of a second embodiment of a cover unit housing;

Fig. 6 is a cross-section taken along the line VI-VI 10 of Fig. 5;

Fig. 7 is a plan view of the cover of the cover unit;

Fig. 8 is an enlarged cross-section taken along the line VIII-VIII of Fig. 7 and

15 Fig. 9 is an exploded view of a manhole fitted with the cover unit shown in Figs. 5 to 8;

Fig. 10 is a plan view of another embodiment of a cover housing;

Fig. 11 is a side elevation of the cover housing of 20 Fig. 10;

Fig. 12 is a section taken along the section line 12-12 of Fig. 10;

Fig. 13 is a plan view of a cover for the housing of Figs. 10 and 11;

25 Fig. 14 is a side elevation of the cover shown in Fig. 13;

Fig. 15 is a cross-section taken along the section line 15-15 of Fig. 13; and

Fig. 16 is a fragmentary view of a handle and key 30 for releasing and removing the cover from the housing.

The cover unit is made of stainless steel and comprises an annular housing 1 with an inner opening measuring 200 mm diameter with a 90° stepped flange 2, 20 mm wide, in which a lid 3 (see Figs. 3 and 4) is 35 supported. The upper surface of the housing 1 has a peripheral flange 4 20 mm wide, in which are drilled six

steel manhole 18 and inspection cover 19 measuring 600 mm x 450 mm. A circular hole measuring 240 mm diameter is cut out of the cover and matching holes are then drilled to correspond with the holes 5 drilled in the housing and a line of silicone sealant is applied to the manhole/inspection cover around the line of the drilled holes. The housing 1 is then secured to the manhole/inspection cover by bolts, self-tapping screws or pop rivets (not shown) located in the holes 5 and the 10 matching holes in the manhole/inspection cover.

To secure the cover 3 to the cover unit housing 1 the projections 13 are located in the rectangular apertures 16 and rotated in a clockwise direction so that the projections 13 locate under the welded plates 15 15. The gasket 12 is compressed and forms a hermetic seal between the cover 3 and housing 1.

In a third embodiment illustrated in Figs. 10 to 15, like parts have the same reference numerals as in the two previous embodiments. The cover unit comprises an 20 annular housing 1 closed by a removable cover 3, the housing having a stepped annular rim 20 as shown by the cross-section 12-12 (see Fig. 12). The outer rim 4 has six holes 5 by means of which the cover unit is secured to a manhole/inspection cover as hereinbefore described. 25 The stepped flange 2 has three keyhole shaped apertures 21 which pass through the annular housing.

The circular hole formed by the housing 1 is closed by the circular cover 3 illustrated in Figs. 13 to 15. Spaced at  $120^{\circ}$  about the periphery of the cover are 30 downward projections 22 with enlarged heads 23. These projections align with the keyhole apertures 21 on the housing and, on rotation of the cover relative to the housing, the enlarged heads 23 lock under the narrow parts of the keyhole apertures to secure the cover 3 to 35 the housing 1.

An hermetic seal is formed between the cover and

described. For example, a greater number of projections than three may be provided on the cover to engage a corresponding number of recesses or keeps in the housing to provide an evenly distributed locking effect between  
5 the cover and housing.

In an alternative embodiment, the underside of the cover may have a linkage connected to the projections which is operated by a handle hinged in a recess on the cover surface so that, by lifting the handle and turning  
10 it a quarter of a turn through  $90^{\circ}$ , the linkage extends the projections beyond the periphery of the cover to engage the underside of the stepped flange of the housing.

An instruction plate is fitted to the upper surface  
15 of the cover to indicate the rotational direction of the cover to 'lock' and 'unlock' it. The plate may also include a warning against depositing harmful material, such as stones, in the manhole.

It will be obvious that manhole/inspection covers  
20 may be manufactured incorporating the cover unit according to the invention for installation in new sewage systems.

7. An animal waste disposal cover unit as claimed in any of Claims 1, 5 or 6, wherein the cover is dished at its centre and has a handle flush with its peripheral surface.
- 5 8. An animal waste disposal cover unit as claimed in Claim 7, wherein the handle is pivotable and operates a linkage to extend and retract the projections from the periphery of the lid to engage the underside of the housing to lock and unlock the cover unit.
- 10 9. A manhole/inspection cover fitted with an animal waste disposal cover unit as claimed in any preceding claim.
10. An animal waste disposal unit substantially as herein described with reference to and as shown in Figs. 15 1 to 4, Figs. 5 to 8 or Figs. 10 to 16 of the accompanying drawings.
11. A manhole/inspection cover fitted with an animal waste disposal unit, substantially as herein described with reference to Fig. 9 of the accompanying drawings.

**Patents Act 1977**  
**Examiner's report to the Comptroller under Section 17**  
**(The Search report)**

Application number  
GB 9416077.7

-10-

**Relevant Technical Fields**

(i) UK Cl (Ed.M) E1G (G96B)

(ii) Int Cl (Ed.5) E02D 29/14

Search Examiner  
MR D HAWORTH

Date of completion of Search  
1 NOVEMBER 1994

**Databases (see below)**

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE DATABASE: WPI

Documents considered relevant  
following a search in respect of  
Claims :-  
1-11

**Categories of documents**

- |   |   |
|---|---|
| <b>X:</b> Document indicating lack of novelty or of inventive step.   | <b>P:</b> Document published on or after the declared priority date but before the filing date of the present application.        |
| <b>Y:</b> Document indicating lack of inventive step if combined with one or more other documents of the same category. | <b>E:</b> Patent document published on or after, but with priority date earlier than, the filing date of the present application. |
| <b>A:</b> Document indicating technological background and/or state of the art.   | <b>&amp;:</b> Member of the same patent family; corresponding document.   |

Category	Identity of document and relevant passages	Relevant to claim(s)
A	GB 2247037 A (MCGREGOR)	
A	GB 0297006 A (BRENT)	

**Databases:** The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).



**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**